



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,088	03/23/2004	Geoffrey Burke Bauer	10543-069	3841
7590	05/02/2006		EXAMINER	
John M. Card BRINKS HOFER GILSON & LIONE P.O. Box 10395 Chicago, IL 60610				MANCHO, RONNIE M
		ART UNIT	PAPER NUMBER	3663

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/807,088	BAUER ET AL.	
	Examiner Ronnie Mancho	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 16 February 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-5, 7, 9-13, 16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-5, 7, 9-13, 16, 17 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                     | Paper No(s)/Mail Date. _____ .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____ .                                  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1 and 12 are objected to because of the following informalities:

In claims 1 and 12, the applicant is advised to change “measures” to --measured-- for clarity.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 7, 9-13, 16, 17 rejected under 35 U.S.C. 102(e) as being anticipated by Tseng et al (2005/0149240).

Regarding claim 1, Tseng et al (abstract; figs. 1-8) disclose a system for estimating body states of a vehicle comprising:

a first set of at least two sensors (32, 35, 36; sec. 0046, 0046 eqtn 1; fig. 4) mounted to the vehicle, the first set of sensors generating measured vehicle state signals corresponding to the acceleration of the vehicle in a first direction (sec 0023 to 0028, 0046, 0047);

a second set of at least two sensors (32, 35, 36; sec. 0046, 0047 eqtn 1; fig. 4) mounted to the vehicle, the second set of sensors generating measured state signals corresponding to the acceleration of the vehicle in a second direction (sec 0023 to 0028, 0046, 0047);

a signal adjuster (66, 68, fig. 4) which transforms the measured vehicle states signals from a sensor coordinate system to a body coordinate system associated with the vehicle (sec. 046 to 0050); and

a filter (74, fig. 4; sec 0049) which receives the transformed measured signals from the signal adjuster (66, 68) and processes the measured signals into body state estimates (figs 4, 6-8) of the vehicle.

Note! The prior art disclose a global attitude sensing system that measures acceleration in Y, Y, Z directions i.e. in three dimensions using at least three sensors, 32, 35, 36. Therefore, according to sections 0046 and 0047 of the prior art, equations 1-6 indicate that the acceleration in any direction is computed as a resultant of at least three sensors. That is, the movement or acceleration is the X-direction for example is a result of the contribution from the sensors that sense movement or acceleration in the Y-direction and the Z-direction. The same analogy applies to the Y and Z directions

Regarding claim 2, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 1 wherein the filter includes a model of the vehicle dynamics and a model of the sensors, the state estimates being based on the transformed measured signals and the models of the vehicle dynamics and sensors.

Regarding claim 3, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 1 wherein the filter includes an estimator, an algorithm being implemented in the estimator

Art Unit: 3663

to process the transformed measured signals and the models of the vehicle dynamics and sensors and generate the state estimates.

Regarding claim 4, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 1 wherein the sensors are linear accelerometers.

Regarding claim 5, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 1 wherein one of the sensors is an angular rate sensor.

Regarding claim 7, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 6 wherein the sensors further include two accelerometers that measure accelerations in a third direction.

Regarding claim 9, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 8 wherein the sensors include two accelerometers that measure the vertical accelerations of the vehicle.

Regarding claim 10, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 1 wherein the state estimates relate to the vehicle's lateral velocity, yaw rate, roll angle, and roll rate.

Regarding claim 11, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the system of claim 1 wherein the signal adjuster further provides compensation for gravity biases associated with the sensors.

Regarding claim 12, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose a method for estimating body states of a vehicle comprising:

generating measured vehicle state signals corresponding to the acceleration of the vehicle in a first direction with a first set of at least two sensors (32, 35, 36; sec. 0046, 0046 eqtn 1; fig. 4);

generating measured vehicle state signals corresponding to the acceleration of the vehicle in a second direction with a second set of at least two sensors (32, 35, 36; sec. 0046, 0046 eqtn 1; fig. 4);

transforming the measured vehicle states signals from a sensor coordinate system to a body coordinate system associated with the vehicle (sec. 0046-0053); and

processing the measured signals into body state estimates of the vehicle (sec. 0054-0057).

Note! The prior art disclose a global attitude sensing system that measures acceleration in Y, Y, Z directions i.e. in three dimensions using at least three sensors, 32, 35, 36. Therefore, according to sections 0046 and 0047 of the prior art, equations 1-6 indicate that the acceleration in any direction is computed as a resultant of at least three sensors. That is, the movement or acceleration in the X-direction for example is a result of the contribution from the sensors that sense movement or acceleration in the Y-direction and the Z-direction. The same analogy applies to the Y and Z directions

Regarding claim 13, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the method of claim 12 system of claim 1 wherein the processing includes modeling the vehicle dynamics and the sensors.

Regarding claim 14, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the method of claim 12 wherein the generating includes measuring linear accelerations.

Regarding claim 15, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the method of claim 12 wherein the generating includes measuring an angular rate of the vehicle.

Regarding claim 16, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the method of claim 12 wherein the state estimates relate to the vehicle's lateral velocity, yaw rate, roll angle, and roll rate.

Regarding claim 17, Tseng et al (abstract; sec. 0043-0053; figs. 1-8) disclose the method of claim 12 wherein the transforming includes providing compensation for gravity biases associated with the sensors.

#### ***Response to Arguments***

3. Applicant's arguments filed 2/16/06 have been fully considered but they are not persuasive.

The applicant is arguing that the prior art, Tseng et al do not disclose the use of a first set of at least two sensors that measure the acceleration of the vehicle in a first direction and a second set of at least two sensors that measure the vehicle acceleration in a second direction.

In response, the examiner disagrees. The prior art disclose a global attitude sensing system that measures acceleration in Y, Y, Z directions i.e. in three dimensions using at least three sensors, 32, 35, 36. Therefore, according to sections 0046 and 0047 of the prior art, equations 1-6 indicate that the acceleration in any direction is computed as a resultant of at least three sensors. That is, the movement or acceleration in the X-direction for example is a result of the contribution from the sensors that sense movement or acceleration in the Y-direction and the

Z-direction. The same analogy applies to the Y and Z directions. Therefore, Tseng anticipate all the limitations in the claims.

It is believed that the rejection is proper and stands.

***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Communication***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronnie Mancho whose telephone number is 571/272/6984. The examiner can normally be reached on Mon-Thurs; 9-5.

Art Unit: 3663

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571/272/6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ronnie Mancho  
Examiner  
Art Unit 3663

4/30/06

JACK KEITH  
SUPERVISORY PATENT EXAMINER